FORM No. 65.

Forest Department, Bombay, Southern Circle.

Financial results of the year 1894-95.

Division.	Timber and other Produce removed from the Forests by Government Agency.		Other Revenue.		Formation, Protection and Improvement of Forests.	Total.		Remarks.
	Receipts.	Charges.	Receipts.	Charges.	Charges.	Receipts.	Charges.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Direction	...	...	117	31,419	...	117	31,419	
Northern Division of Kanara	5,06,789	2,23,109	1,01,223	4,569	54,056	6,08,012	2,81,734	
Central Division of Kanara	1,74,187	62,017	42,461	15,366	29,545	2,16,648	1,06,928	
Southern Division of Kanara	27,931	19,670	44,378	17,047	13,862	72,309	50,579	
Belgaum Division ...	2,50,156	1,02,818	80,137	12,715	16,398	3,30,293	1,31,931	
Dharwar do. ...	53,431	32,372	40,189	2,117	13,764	93,620	48,253	
Bijápúr do. ...	356	...	33,386	7,624	16,909	33,742	24,533	
Kolábá do. ...	5,615	26,346	1,59,465	38,300	61,760	1,65,080	1,26,406	
Ratnagiri do. ...	36	3,561	5,171	3,904	7,643	5,207	15,108	
Total ...	10,18,501	4,69,893	5,06,527	1,33,061	2,13,937 —1,211	15,25,028	8,16,891 —1,211	

J. L. L. MacGREGOR,
Conservator of Forests, Southern Circle.

Belgaum, 27th September 1895.

No. 250 of 1896.

Revenue Department.

Camp Bijápur, 21st January 1896.

Forwarded to Government. The report of the Conservator of Forests, though dated the 2nd November last, was received in this office only yesterday, the rough proof having been sent to the undersigned on the 28th December last.

2. The total Forest area of the Southern Circle decreased by 54 square miles during the year 1894-95, owing to the dis-afforestment of 98 square miles in Belgaum and Dhárwár during final settlement, and to the afforestation of 44 square miles of new selections in the same districts.

3. The transfer was effected of 305 square miles from "Protected" to "Reserved," the total areas under these heads becoming 2,498 and 2,820 square miles respectively.

4. In Form No. 47 attached to the report the progress of Forest Settlement up to date is thus shown :—

	Square miles.
Already settled at commencement of year ...	... 2,455
Finally settled during the year... ...	... 349
Undergoing settlement at commencement of year	... 2,223
Taken in hand during year	... 289
Total	... 5,316

5. The total Forest area being 5,318 square miles there apparently remain only 2 square miles in which the settlement work remains to be taken in hand. But in paragraph 19 the Conservator appears to put the figure at 400 square miles. His paragraphs 6 to 23 with their figures are however rather hard to assimilate, and it is not very clear what actual progress was made during the year under report. The Conservator omits to mention that Mr. Sheppard submitted his report on 176 villages of the Yellápur, Sirsi and Siddápur Tálukas before the close of the Forest year. Little work remains to be done outside Kánara.

6. The paragraphs 24—26 relating to demarcation are rather meagre and a reference to the work recorded in Form 48 of the Central and Southern Divisions of Kánara shows that 98 miles of boundary were artificially demarcated and 111 miles of boundary were repaired during the year.

7. There appears to be some want of uniformity in dealing with this subject. Dhárwár is credited with 3,385 miles of boundaries, while the other Divisions seem to have to manage with no boundaries at all or with very few.

8. Paragraphs 28—34 relate to the Forest Survey. The Conservator's remarks are confined to the subject of cost, which is shown to be gradually decreasing.

9. The work carried out during the Forest year is shown in Form 49 over the signature of the Superintendent, Bombay Forest Surveys, a copy of whose annual report has been received in this office, together with the Survey Commissioner's review, the following extract from which summarises the operations carried on in the Southern Division :—

"*Kánara Forests.*—Work was confined to triangulation and traverse. This is in accord with the plan sketched out last year of endeavouring to make greater progress by securing a large area for future detail survey. The area triangulated was 725 square miles in 3 Tálukas (Yellápur, Sirsi and Ankola). The cost compares very favourably with that of similar work last year in Kánara. Traverse was done in 75 square miles of Kárwár, at a cost of Rs. 29 per square mile. Colonel Hobday remarks that two causes combined to raise the cost,—difficulty of country, and inexperience of the Surveyor. The latter was evidently the principal reason, for the Kárwár Táluka does not present such difficulties as other tálukas of Kánara."

"*Kolába Forests.*—Work in Pen Táluka was continued, and completed in Alibág. The cost of detail survey, including the triangulation, was about Rs. 186 per square mile. The cost of the detail survey, excluding triangulation, is a little less than last year."

10. The actual progress made up to date by the Forest Survey is not easily ascertainable. A rough sketch showing the progress made in the various sheets, in triangulation, traverse, and detail survey, would be of much assistance in facilitating a comprehension of the figures given, and the Acting Commissioner would suggest that the Superintendent be requested to attach such a sketch to his future Annual Reports. The sketch might also indicate progress in the preparation and issue of maps, which is shown to have been in arrears since 1888-89.

11. Paragraphs 35—50 relate to Working Plans and their control. Of the two parties at work, No. I completed the organization of the Kolába Forests. Physical and other difficulties appear to have combined to raise the cost from 2 annas 8 pies to 4 annas 1·6 pies per acre. No. II party completed the organization of the unhealthy and difficult "Gund-group," and transferred operations to easier ground in the Central Division of Kánara, where a better outturn may be looked for as the result of next season's work.

12. In his 39th and following paragraphs the Conservator explains in some detail the operations that are necessitated by the character of the Kánara forests, and he appears to successfully avoid the charge of over-elaboration. The Acting Commissioner had the pleasure, years ago, of superintending heavy timber operations in the "Gund-group" as well as in other parts of the principal Forests of Kánara, and can well appreciate the difficulties described and dealt with.

13. The working plan referred to in paragraph 48 was submitted to Government with this office No. 471 of 11th February 1895.

14. Paragraphs 51—56.—The expenditure on communications and buildings was small and was chiefly confined to the Northern Division of Kánara.

15. The total number of breaches of the Forest law reported to have been committed during the year was 1,718 against 1,600 in 1893-94: they are classified below :—

Nature of offence.	Dealt with by Magistrates.	Dealt with under Section 67.	Not detected.
Injury to forest by fire	7	5	637
Unauthorised fellings	269	354	314
Grazing without permission	8	20	.....
Other offences	80	24	.....
Total ...	364	463	951

16. The following table shows the results of prosecutions instituted in regard to 446 offences, *i. e.* 364 committed during the year and 82 pending trial at the beginning of the year :—

District.	1893-94.			1894-95.			Percentages of failures.	
	Prosecutions.	Convictions.	Acquittals.	Prosecutions.	Convictions.	Acquittals.	1893-94.	1894-95.
Belgaum	32	26	5	32	21	8	15	27
Bijápur	10	10	...	22	21	1	...	4·5
Dhárwár	19	12	5	16	8	8	26	50
Kánara	166	78	82	85	37	28	51·2	43
Kolába	291	187	33	278	238	25	11	9·5
Ratnágiri	63	43	18	13	10	2	28	16·6

17. The rise in the percentage of failures in Belgaum is attributed to the dishonesty of witnesses: in Dhárwár it is not accounted for: in Bijápur it is trifling. Elsewhere there is a satisfactory decline in this percentage.

18. The following table gives details of the cases dealt with under Section 67 of the Act:—

District.	1893-94.				1894-95.			
	Total cases disposed of.	Number commuted.	Number discharged.	Compensation recovered.	Total cases disposed of.	Number commuted.	Number discharged.	Compensation recovered.
				Rs.				Rs.
Belgaum	86	84	2	36	115	115	...	147
Bijápur	12	12	...	15	22	22	...	20
Dhárwár	35	5	30	1	11	11	...	12
Kánara...	41	40	1	435	126	126	...	597
Kolába...	181	181	...	618	122	122	...	788
Ratnágiri	39	39	...	71	20	20	...	7
Total ...	394	361	33	1,176	416	416	...	1,571

19. The majority of these cases appear to have related to the misappropriation of timber and firewood and to have been dealt with leniently. The increase in Kánara was largely due to an outbreak of kumri cultivation in the Supa Petha, referred to hereafter. Greater severity appears to have been dispensed in Kolába than elsewhere, where in 21 cases fines of over Rs. 10 were exacted, and in one case alone the fine reached Rs. 150. But from the Conservator's 75th paragraph it would appear that large numbers of people were there implicated in single cases, and in the absence of detail it is impossible to understand on what principle such cases are entered as single cases and what their relative importance may have been.

20. There appear to be errors in the tabular statement contained in paragraph 76, which detract from the value of the conclusions drawn in paragraph 77. Not 361, but 407, cases came up for disposal under Section 67 in 1893-94; and the 416 cases entered under 1894-95 include 13 cases pending from 1893-94. In 1893-94 thirty-three cases were disposed of without exaction of any penalty. In 1894-95 penalties were exacted in all cases. The facts therefore are that fewer fresh cases have come up under Section 67 during the year under report, and that greater strictness has been shown in dealing with them.

21. Paragraphs 78-79.—It is not clear from the quotation given whether the Bijápur Collector intended to find fault with the exaction of penalties in trivial cases, or with the omission to exact a penalty for the offence committed as well as for the damage done. But anyhow the Conservator shows that it is necessary to take up apparently trivial cases in a district where protection is important and the value of the forests is prospective rather than real.

22. It is difficult to form any opinion of the success or failure of the measures taken for protection against fire. The figures given in paragraphs 81 and 93—of areas specially protected and of areas that escaped fire without the adoption of special measures,—when added together exceed in three instances the total Forest areas of the respective divisions, *viz.*:—

	Total area.	Protected from fire or escaped fire without protection.
	Square miles.	Square miles.
Northern Division of Kánara ...	1,189	1,304
Belgaum	675	683
Dhárwár	382	398

23. Also the area in which measures for protection are taken is understood (see Conservator's 84th paragraph) to be limited to Reserved Forest. The area of the Reserved Forest of the Northern Division of Kánara is 466 square miles (Form 46), whereas protection from fire is represented in paragraph 81 to have been carried out there in 567 square miles.

24. In paragraph 88 the Conservator gives it as his opinion that the greater part of the Siddápur and Sirsi ranges was no doubt burnt. This opinion was formed on personal observation (94). Yet his subordinates report that 99·6 per cent. of the Forests of the Southern Division of Kánara escaped conflagration. It is impossible in the face of such statements to know what figures are reliable and what are not.

25. Paragraphs 96—102.—The area closed to all animals remained almost unaltered, while an addition of 114 square miles was made to that closed to browsers only. It may be noted that the total area of the Forests of the Division is 5,318 square miles; that the figures given in the Conservator's 96th paragraph as showing the distribution of the area with regard to grazing total up to 5,345 square miles; and that by a strange manipulation of figures the area is increased to 5,372 square miles in Form 54.

26. To an officer fresh from the Deccan districts the numbers of cattle impounded in the various Divisions of the Southern Circle appear abnormally small, although there was an increase of about 35 per cent. over the returns of the preceding year. This increase mainly occurred in the closed forests of Dhárwár and Kolába, and is accounted for by departmental activity. It may have had something to do with the drought which the Conservator mentions elsewhere. It does not seem at all improbable that the vast difference between the impoundings that take place in the Southern Circle and those in the Deccan districts is chiefly due to the character of the forests. The absence of trees from a large portion of the Deccan forests facilitates the view and capture of trespassing cattle.

27. The season was not a favourable one for natural reproduction by seed, but progress appears to have been satisfactory notwithstanding. No doubt fencing must be introduced where illicit grazing cannot be controlled: otherwise all attempt at afforestation must there be abandoned as useless. The Conservator's remarks (108-109) on artificial regeneration are very interesting, and doubtless a vast deal more can be achieved at less expense by the method described than by the formation of regular plantations.

28. The following table extracted from Form No. 57 contrasts the outturn of major forest produce during 1894-95 with that of the previous year:—

Produce.	Outturn.		+	—
	1893-94.	1894-95.		
	Cubic feet.	Cubic feet.		
Timber—				
Rough logs	334,861	304,342	...	30,519
„ poles	757,744	511,170	...	246,574
Sawn or square	504,634	488,248	...	16,386
Miscellaneous	96,465	101,760	5,295	...
Fuel	7,036,613	7,768,107	731,494	...
Sandalwood—				
Khandis	118 4 18	88 3 18	...	30 1 0
Sandalwood	.....	322 0 0	322 0 0	...
Trees, poles	9,199 (No.)	21,471 (No.)	12,272	...
Bamboos	4,591,141 (No.)	5,246,723	655,582	...
Dry bamboos, cart-loads ...	.....	604	604	...

29. The causes of increase and decrease are summarised as briefly as possible by the Conservator. There was a remarkable increase in the demand for fuel and bamboos and an extensive clearance of sandal trees from málki numbers took place in Belgaum and Dhárwár.

30. The following table compares the receipts and charges for the financial year 1894-95 with those of the previous year :—

Year.	Revenue.	Expenditure.	Surplus net Revenue.
	Rs.	Rs.	Rs.
1893-94 ...	15,12,407	8,39,773	6,72,634
1894-95 ...	15,49,856	8,30,072	7,19,784
	+37,449	—9,701	+47,150

31. The increase in the net revenue is assigned to a large recovery of outstandings and to the diminution of expenditure under "Works," and the Conservator remarks that had the myrobalan crop been up to the average the net revenue would have shown a better result by about three-quarters of a lákh of rupees.

32. The renascence of kumri cultivation in the Supa Petha of the Northern Division of Kánara was a remarkable event of the year. Government have passed orders on the subject in their Resolution No. 9643 of 5th December 1895.

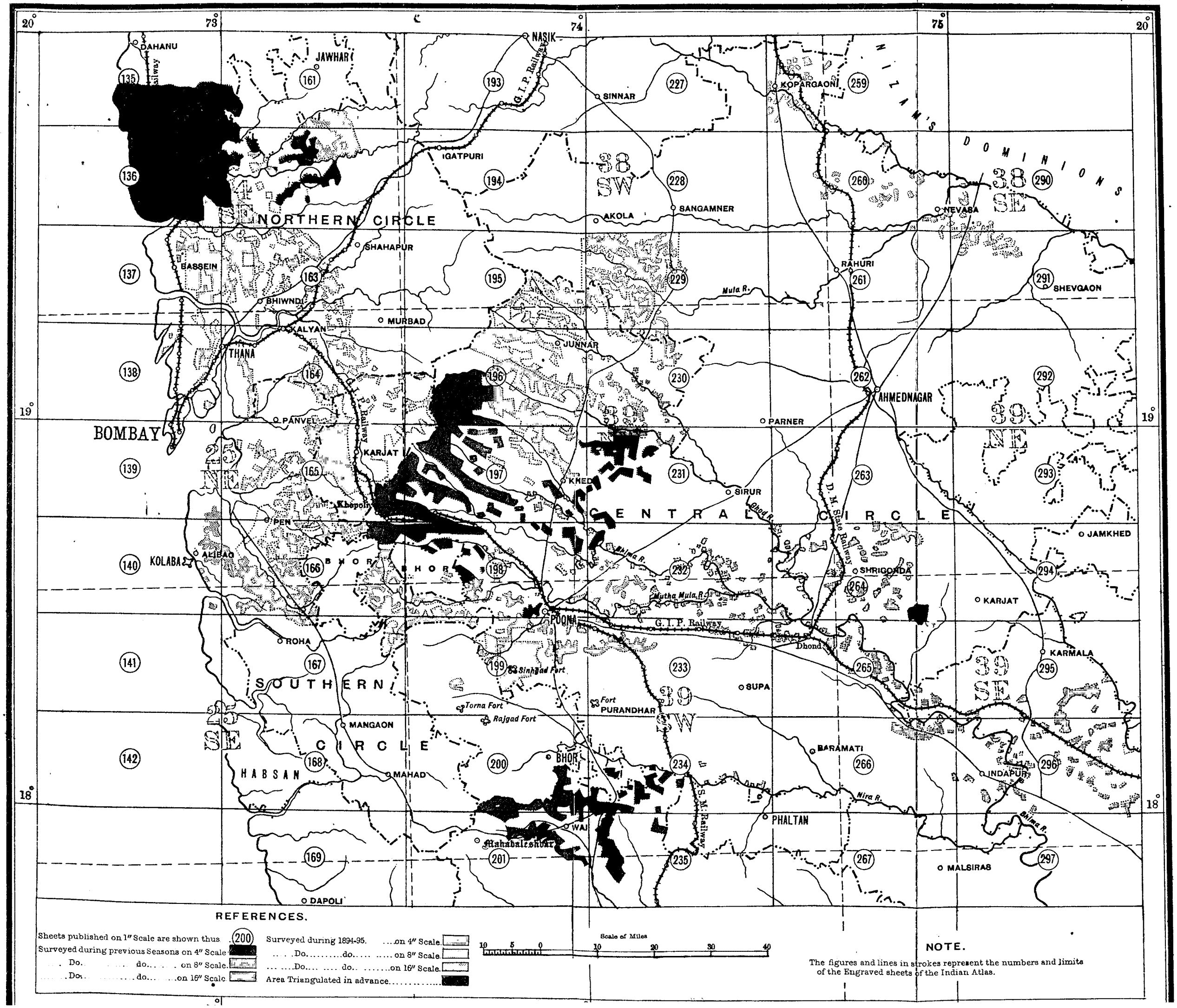
32. Government will doubtless notice with pleasure the Conservator's acknowledgment of the good work done by his Divisional Officers and others. The Acting Commissioner shares the regret with which the death is recorded of Mr. J. M. Fernandez, Extra Assistant Conservator.

E. J. EBDEN,
Acting Commissioner, S. D.

BOMBAY SURVEY.

INDEX TO THE FOREST SURVEYS IN PORTIONS OF THE NORTHERN AND CENTRAL CIRCLES.

1894-95. No. 17 PARTY.



REFERENCES.

Sheets published on 1″ Scale are shown thus (200)

Surveyed during previous Seasons on 4″ Scale

Do. do. on 8″ Scale.

Do. do. on 16″ Scale

Surveyed during 1894-95. on 4″ Scale.

Do. do. on 8″ Scale.

Do. do. on 16″ Scale.

Area Triangulated in advance

Scale of Miles

10 5 0 10 20 30 40

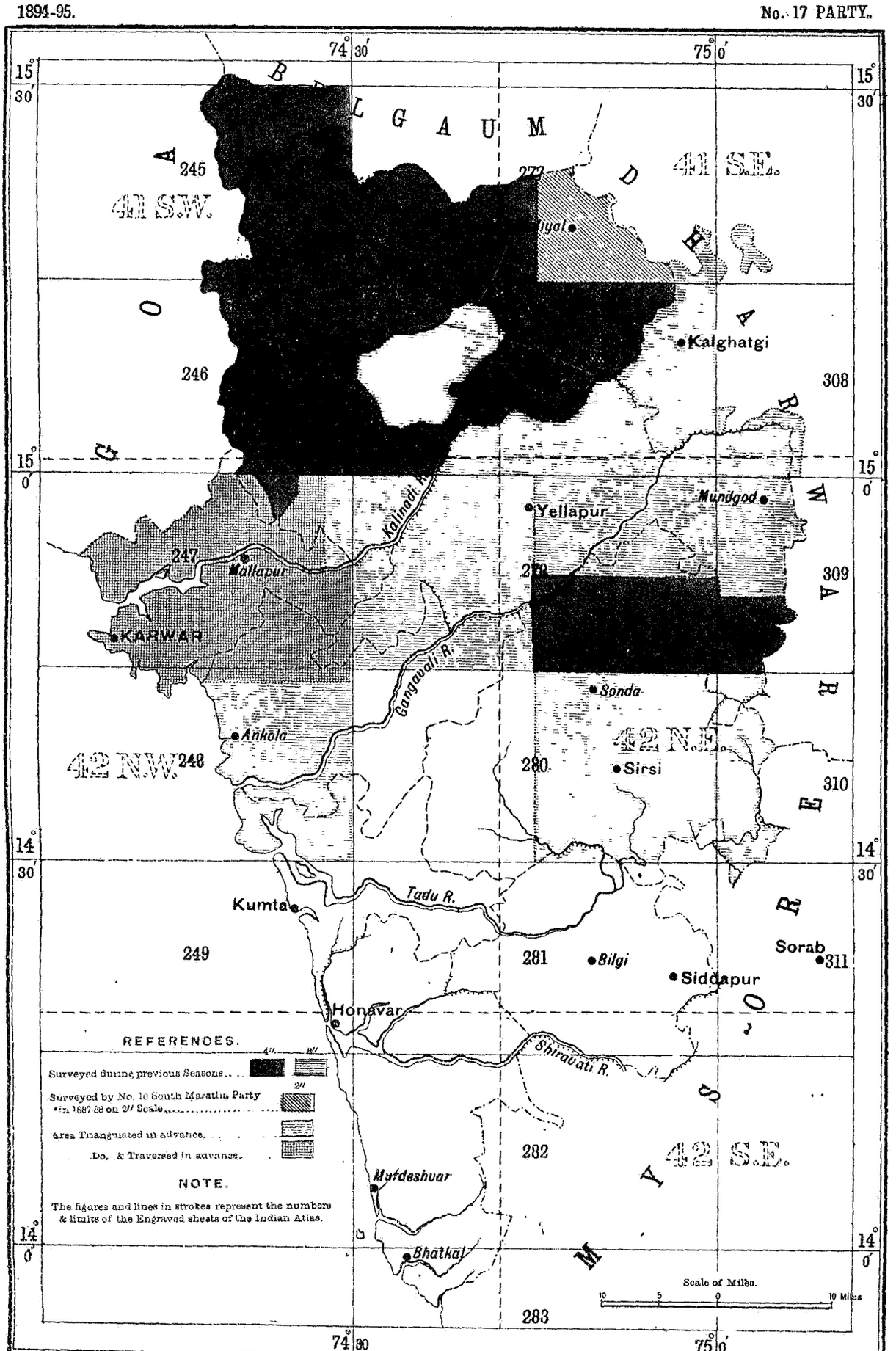
NOTE.

The figures and lines in strokes represent the numbers and limits of the Engraved sheets of the Indian Atlas.

BOMBAY SURVEY.

INDEX TO THE FOREST SURVEYS IN THE SOUTHERN CIRCLE (N. KANARA).

1894-95. No. 17 PARTY.



Reg. No 339 S ... —Dec 95.—350.

Reg. No 80 ... —Feb 96.—...

Photo S. I. O., Calcutta

No. 546-S. 95.

Annual Report of No. 17 Bombay Forest Survey Party for the year 1894-95.

Personnel.

Lieutenant-Colonel J. R. Hobday, I.S.C., Officiating Superintendent, 2nd Grade, in charge; Mr. C. E. Tapsell, Extra Assistant Superintendent, 4th Grade; Mr. S. F. Norman, Extra Assistant Superintendent, 6th Grade; Mr. C. Norman, Extra Assistant Superintendent, 6th Grade; 2 Surveyors; 19 Sub-surveyors; 1 Draftsman; 1 Writer; and 14 Temporary Sub-surveyors.

Date of taking the field, and return to recess quarters.

2. The party took the field about 1st November, and returned to recess quarters at Poona, about the end of May.

General plan of operations.

3. The survey of the forest areas in the Northern, Central, and Southern Circles of the Bombay Presidency was continued as in former years, *viz.*, bábul reserves on the 16″ scale, teak areas on the 8″ scale, and all other forests on the 4″ scale.

At the commencement of the season Mr. Tapsell was incapacitated for field work, by an attack of typhoid fever. In January he was deputed to supervise the 4″ surveys in Haveli táluka of Poona district, and on their completion in March, proceeded to superintend the 8″ surveys in Alibág táluka of Kolába district.

Mr. S. F. Norman was first placed in charge of the 8″ surveys in Akola táluka of Ahmednagar district, and in March, proceeded to Wáda táluka of Thána district, to continue the 8″ surveys in that taluka.

Mr. C. Norman was at first deputed to superintend the 4″ and 8″ surveys in Haveli táluka of Poona district, during Mr. Tapsell's illness, and afterwards proceeded with his detachment to complete the 8″ surveys of Pen táluka in Kolába district.

Surveyor Gopal Vishnu first commenced a subsidiary triangulation to furnish additional points for the 8″ surveys in Alibág táluka of Kolába district. This he completed, as well as computed, by January. In February he was deputed to supervise 2 sub-surveyors, and with their aid conducted the 16″ surveys of bábul reserves in tálukas Kopargaon and Nevása of Ahmednagar district, till the end of the field season.

Sub-surveyor R. V. Joshi continued the triangulation, in advance of detail survey in North Kánara; whilst temporary sub-surveyor Pandurang Vaidya undertook some traversing in the same district.

Sub-surveyor N. R. Patwardhan completed the supplementary triangulation, and traversing in advance of topography of táluka Máhim in Thána district.

Cost of party, areas, and cost rates of surveys.

4. The total cost of the Bombay Forest Survey Party for the year under report, and the apportionment of charges to the 3 forest Circles amounts to—

Circle.	Financial year ending 31st March 1895.			Forest year ending 30th June 1895.			Survey year ending 30th September 1895.		
	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.
Northern Circle	11,179	14	0	11,177	0	0	11,402	10	7
Central Circle	27,146	6	7	27,136	0	0	27,711	15	1
Southern Circle	28,403	1	7	30,645	5	9	31,258	1	0
Total ...	66,729	6	2	68,958	5	9	70,372	10	8

The calculation of cost rates of any given survey are based on the totals for the *survey year*, as they truly represent the actual cost of its survey in the field, and its subsequent mapping during the recess. It will be noted that the apportionment for the forest year does not widely differ from that for the survey year; consequently the cost rates are not materially affected by taking either sets of figures.

The areas of triangulation, traversing and topography completed in each of the 3 forest Circles, during the season under report, together with their cost rates, are given in the accompanying statements A, B and C.

The total areas in square miles completed on the various scales, during the last and previous seasons, are as follows :—

Description of Survey.	1893-94.			1894-95.		
Scale.	4″.	8″.	16″.	4″.	8″.	16″.
Triangulation	465	...	...	725	355	....
Traversing	215	...	...	75	200	...
Topography	202	222	65	159	285	24

The decrease of area in the outturn of topography on the 4″ scale, as compared with that of the previous year, is due to the fact that no detail surveys were undertaken in North Kánara during the season under report, and the decrease on the 16″ scale is due to the small number of sub-surveyors (2) that were available for this special work. On the other hand, there is an increase in the outturn on the 8″ scale, and a very considerable increase of triangulation in advance of topography.

The average cost rates of the surveys on the various scales, as compared with those of the previous year, are as follows :—

		1893-94.	1894-95.
		Cost rate per square mile.	Cost rate per square mile.
		Rs.	Rs.
Triangulation ...	4″ Scale	10·8	8·8
	8″ „	.....	15·0
Traversing ...	4″ Scale	12·6	29·5
	8″ „	.....	4·8
Topography ...	4″ Scale	84·8	81·0
	8″ „	156·4	139·5
	16″ „	179·5	116·5

The above shows a diminution of cost rates in every instance, with the exception of the cost rate of traversing on the 4″ scale, the increase being due to the difficult nature of the country (North Kánara), and the expense of cutting rays through dense forest, also to the fact of the surveyor, who was employed on the work, being comparatively a new hand, this being his first attempt at traversing. The "*modus operandi*" of traversing, which has hitherto been in vogue in this party, was also found to be a laborious one, and will be modified in future with better results. The large decrease in the cost rates of 16″ surveys is due to the absence of European supervision. These bábul reserves being small

blocks situated on the banks of the principal rivers of the Deccan, on flat ground and easy to survey, it was deemed sufficient to place a reliable native surveyor in charge of the work. The senior surveyor in the party, Gopal Vishnu, conducted these operations in a thoroughly satisfactory manner. The outer boundaries of the blocks were surveyed by him in person, by plane-table circuits, with 2 chains of different lengths, whilst the interior details were filled in afterwards by his assistants. The 24 square miles surveyed on this scale being finally tested by 33 linear miles of check lines. The employment of native supervision on these surveys was explained to, and approved of by, the Surveyor General on the occasion of his annual inspection this year. It is hoped that the diminution of the cost rate of these special surveys, the need for which, the Conservator of Forests, Central Circle, has fully explained in his last Administration Report, will be approved of by the Imperial and Provincial Governments, who have hitherto brought to notice their costliness. With an increase to the establishment of native surveyors in this party, a still further decrease in the cost rates of these 16″ surveys may reasonably be expected.

The number of native surveyors in the party (27) is inadequate for the 3 European assistants who are appointed to supervise them, consequently an application has been made to the Government of Bombay to raise the Budget allotment from Rs. 71,000 to Rs. 76,000 or an addition of Rs. 5,000, which will provide for the entertainment of 9 or 10 more surveyors and their establishments in the field. This is really only an addition of Rs. 200 on the Budget grant, as the annual allotment for the past 6 years has been Rs. 75,800. This proposed increase in the native staff, if sanctioned, cannot fail to accelerate the progress of the forest surveys, and thereby diminish cost rates. I further propose to enlist these additional men at once, and commence their training, this being the most favourable time of year for their instruction.

The progress of the forest surveys in the Bombay Presidency and consequently their cost rates depend upon a variety of circumstances, some of the most prominent being —

(1) The distance of the field of operations from head quarters.

(2) The scattered nature and size of the forest blocks.

(3) The number of stones, cairns, and other permanent forest marks that have to be laid down on our maps with precision.

(4) The healthiness or otherwise of the localities under survey.

(5) The density of forest growth.

Referring to statements A, B and C, accompanying this report, it will be noted that the cost rates of a survey on any given scale vary in each district and forest Circle; such differences are accounted for by the abovementioned circumstances. The causes which affect the progress, and consequently the cost rates of the surveys in the Deccan or Central Circle, are items 2 and 3 as enumerated above; the cause which affects the progress of the surveys in the Konkan, *viz.*, in Thána and Kolába districts, is item 4; whilst those which influence the rates in Kánara are those cited in items 1, 4 and 5.

Examination of field-work and Superintendent's inspection tour.

5. The accuracy of the seasons topography was tested by 187 linear miles of cheque lines, as well as by "*in situ*" examination; and the camps of the various detachments were visited by the Superintendent, wherever survey operations were in progress.

During December the Superintendent examined the 4″ and 16″ surveys in progress in Haveli táluka of Poona district, under Mr. C. Norman, and again during the early part of January. He then moved on to Ráhuri in Ahmednagar district on the Dhond-Manmád Railway and proceeded *via* Sangamner and Akola to inspect the 8″ surveys of the teak reserves in the latter táluka, under Mr. S. F. Norman, and returned to Poona *via* Khed on the 3rd February. During the latter half of February he visited the 4″ surveys in progress under Mr. Tapsell on the ghâts in Mulshi petha of Haveli táluka. During March and April Mr. C. Norman's

and Mr. Tapsell's camps were again visited, the former at Nagothna in Pen táluka, and the latter in Alibág táluka, Kolába district, and the 8″ surveys in progress in those tálukas were examined, and arrangements made for their completion during the season. From Alibág the Superintendent returned to Bombay, and proceeded by the B. B. & C. I. Railway to Pálghar, and marched across to Wáda, to inspect the 8″ surveys, in progress in that táluká under Mr. S. F. Norman, and finally returned to Poona *viâ* Bhiwndi on 25th April. On the 19th April the Superintendent met Mr. R. C. Wroughton, the Deputy Conservator, Northern Circle, at Manor, and consulted with him on forest survey matters, and regarding the proposed demarcation of coupes in Wáda. On 2nd May, the Superintendent left Poona and embarked at Bombay for Kárwár, where he arrived on the 5th, and met Mr. Davidson, the Collector, and conferred with him regarding the feasibility of getting local labour for our survey parties in Kánara. He then marched *viâ* Kadra to Bara, where he inspected the native surveyor, who was traversing in sheet 247, and then on to Idgundi where he met sub-surveyor R. V. Joshi, who was conducting the triangulation in Kánara; from thence he continued his march *viâ* Yellápur to Alnáwar and finally returned to Poona, by the South Maratha Railway, on the 21 May. During his march through Kánara, the Superintendent was enabled to gain a good idea as to the character of the country that will come under survey during next field season.

In addition to the above, a considerable amount of labour was expended during the intervals, whilst the Superintendent was at Poona in arranging the records of the party, which were found in a very confused state, when he took over charge last year.

Health of the party.

6. The health of the party was good, with the exception of a few cases of sickness in the Konkan, in districts Kolába and Thána.

Mapping and computations.

7. The fair mapping and computations of last season's work are in an advanced state, and I have every reason to believe that they will be completed before the party again takes the field. The number of maps prepared during the recess, or now in hand, are given in statement D accompanying this report.

After overhauling the office records, a register was made by the Superintendent of every map that has been submitted for publication by the Forest Survey Party, since its formation, when it was discovered that some 300 or 400 maps were still lying unpublished in the Poona Photographic Office, including some of the surveys done in 1888-89. This fact was brought to the notice of the Conservators and the Superintendent of the Photographic Office. The former have now been furnished with complete registers of all the maps in their respective Circles, that have issued from the office; whilst the latter has engaged to devote a camera entirely to our maps, and undertakes to print them at the rate of 50 per mensem. So that it is hoped that these arrears will be cleared off in a few months and thus enable Conservators to obtain and make use of the labours of this party, for which they have so long been in need of.

Programme for ensuing field season.

8. The programme for the ensuing field season, as submitted to, and approved by, Conservators of Circles and the Government of Bombay, consists as follows:—

Northern Circle.—Continuation of the surveys of the forest reserves on the 8″ scale in tálukas Wáda and Máhim of the Thána district. It is proposed as an experiment to endeavour to demarcate the coupes in the forest reserves of Wáda táluka "*pari passu*" with the detail survey, also to demarcate the coupes in the blocks that have already been surveyed in that táluka. This procedure was advocated several years ago by Conservators, but pronounced impracticable by my predecessors. Mr. Wroughton, the Deputy Conservator of Forests, Northern Circle, has offered to co-operate with me in carrying out this trial, and engaged to pay for the actual cost of erecting the necessary cairns and pillars. The number of coupes in the Wáda táluka, as given in the last Forest Administration Report remaining to be marked out, is 1,161. If we succeed

in demarcating this quantity and at the same time plot them correctly on our maps, once for all, it will materially help the Deputy Conservator, who with his establishment can only demarcate annually about 300 coupes in the whole of his Circle or about one coupe in advance in each block.

Central Circle.—Supplementary triangulation in advance of detail survey for the teak reserves remaining unsurveyed in tálukas Akola and Sangamner of Ahmednagar district.

Detail survey of forest reserves on 4″, 8″ and 16″ scales in tálukas Sirur, Purandhar, Bhimthadi and Indápur, thus completing the Poona district.

Southern Circle.—Triangulation of sheet 249, and western halves of sheets 280 and 281 in Kánara, and traversing in portions of sheets 279, 280 and 310.

Detail survey on the 4″ scale of sheet 247, and western half of sheet 279 in Kánara, embracing an area of about 600 square miles.

J. R. HOBDAY, Lieut.-Col., I. S. C.,
Superintendent, Bombay Forest Surveys.

A.

Statement showing the Forest Survey work and its cost during Survey year 1894-95.

In the Northern Circle.

Description of Survey.	Scale.	District.	Area in Square miles.	Total cost for Survey year.	Cost rate per Square mile.	Remarks.
				Rs. a. p.	Rs. a. p.	
Triangulation	8″ = 1 mile.	N. Thána ..	155	970 4 5	6 4 2	In Máhim Táluka.
Traversing	Do. ...	Do. ...	200	970 4 5	4 13 7	
Detail Survey.... ...	Do. ...	Do. ...	55·51	9,462 1 9	170 7 4	In Wáda Táluka.
		Total ...		11,402 10 7		

B.

Statement showing the Forest Survey work and its cost during Survey year 1894-95.

In the Central Circle.

Description of Survey.	Scale.	District.	Area in Square miles.	Total cost for Survey year.	Cost rate per Square mile.	Remarks.
				Rs. a. p.	Rs. a. p.	
Detail Survey	4″ = 1 mile...	Poona ...	159·35	12,917 10 4	81 1 4	
Do. ...	8″ = 1 „ ...	Do. ...	6·89	802 10 1	116 6 5	
Do. ...	Do. ...	Ahmednagar.	106·14	11,167 15 9	105 3 4	
Do. ...	16″ = 1 mile	Poona ...	0·41	47 12 10	114 10 5	
Do. ...	Do. ...	Ahmednagar.	23·83	2,775 14 1	116 7 2	
		Total ...		27,711 15 1		

J. R. HOBDAY, Lieut.-Colonel, I. S. C.,
Superintendent, Bombay Forest Surveys.

Poona, 1st October 1895.

C.

Statement showing the Forest Survey work and its cost during the Survey year 1894-95.

In the Southern Circle.

Description of Survey.	Scale.	District.	Area in Square miles.	Total cost for Survey year.	Cost rate per Square mile.	Remarks.
				Rs. a. p.	Rs. a. p.	
Triangulation ...	8″ = 1 mile.	Kolába ...	150	4,336 5 0	28 14 6	186-3-5 = total cost rate of 8″ survey in Kolába.
Detail Survey ...	Do.	Do. ...	116·69	18,356 9 0	157 4 11	The cost rate of triangulation is higher than usual because it had to be computed in the field.
Triangulation ...	4″ = 1 mile ...	N. Kánara.	725	6,345 14 0	8 12 1	38-5-6 = cost rate of triangulation and traversing in Kánara.
Traversing ...	Do.	Do. ...	75	2,219 5 0	29 9 5	The traversing in Kánara is more expensive than it should be, owing to the difficulties of the country and density of forests, &c. ; also a new hand was employed on the work. The cost of traversing coupled with the cost of triangulation is not an exorbitant rate.
		Total ...		31,258 1 0		

D.

Statement showing the amount of fair mapping completed during recess season of 1895.

Circle.	District.	Scale.	Number of Sections.	Remarks.
Northern Circle ...	N. Thána ...	8″ = 1 mile.	11	To be sent to Government Photo Office, Poona, for publication.
Central Circle ...	Poona ...	4″ = „ ...	18	
Do. ...	Do. ...	8″ = „ ...	6	
Do. ...	Do. ...	16″ = „ ...	1	
Do. ...	Ahmednágar.	8″ = „ ...	31	
Do. ...	Do. ...	16″ = „ ...	44	
Southern Circle ...	Kolába ...	8″ = „ ...	19	
Do. ...	N. Kánara ...	2″ = „ ...	8	For reduction to ½ scale. To be sent to Calcutta for publication.

J. R. HOBDAY, Lieut.-Colonel, I. S. C.,
Superintendent, Bombay Forest Surveys.

Poona, 1st October 1895.

No. S—2823 of 1895.

From

E. C. OZANNE, Esquire, I.C.S.,
Survey Commissioner and Director of
Land Records and Agriculture;

To

The CHIEF SECRETARY to GOVERNMENT,
Revenue Department.

Poona, 26th November 1895.

Sir,

I have the honour to submit the Annual Report of the Bombay Forest Survey, for the year ending 30th September 1895. Copies of the report are being furnished to the Conservators of the three Forest Circles, and to the Commissioners of Divisions with copies of this forwarding report, as directed in Government Resolution No. 5335, dated 15th July last. It was in this Resolution that sanction was accorded to Colonel Hobday's proposal that his report should not be as heretofore included in the Progress Report of Revenue Surveys.

2. The party of the Survey of India, deputed to carry out Forest Surveys in Bombay, and a Topographical Survey concurrently with the Forest Survey in Kánara, was under the charge of Lieutenant-Colonel Hobday, Officiating Superintendent 2nd Grade. The work to be reviewed is that of the first year of Colonel Hobday's charge. In one respect he has already reduced cost, by freeing the scattered Babhul Block surveys from the cost of European supervision, but the cost so saved will fall on other portions of work, with improved supervision no doubt, till the further step of increasing the subordinate staff of surveyors has been taken. An enlarged budget provision has been recently asked to make this step possible.

3. The total cost of the Party, and the distribution of the cost among the Circles, with comparative figures for the previous year, are shown below:—

Year.	Northern Circle.	Central Circle.	Southern Circle.	Total.
	Rs.	Rs.	Rs.	Rs.
1893-94	10,243	28,796	32,760	71,800
1894-95	11,403	27,712	31,258	70,373

As has been explained in former reports, the cost in the Southern Circle should be reduced by Rs. 10,000, the estimated cost of Topographical Survey which but for the presence of the party would have fallen on the Survey of India. This estimated cost is in the opinion of Colonel Hobday a fair deduction, as proved by the actual cost of the work undertaken in the Southern Circle. The Conservator, Southern Circle, considers that he is overcharged for the work done for him. In my opinion he has not shown sufficient reason to modify the estimate. At all events, it is too late to ask the Government of India to reconsider the arrangement made.

4. I need not repeat the detailed comparison as to the cost of the various items of the work, which are succinctly given by Colonel Hobday. In the latter portion of his paragraph 4 he shows the reasons why similar work costs more in one tract than another, and all the reasons given have been abundantly illustrated in this and former seasons' work. It is to his credit that by judicious apportionment of work between healthy and unhealthy tracts the loss of time by sickness

has been so greatly reduced. His own supervision has been close, and it is satisfactory that he will be able even tentatively to undertake the demarcation of Forest coupes in Thána *pari passu* with the detail survey, the Forest Department co-operating by erecting the necessary cairns. The arrears in the Photozincographic Department are serious. It is somewhat strange that the existence of the arrears has not before this date attracted the notice of the Conservators.

5. The work done during the year may be analysed as follows :—

NORTHERN CIRCLE.

Thána Forests.—In Váda Taluka, 55½ square miles more of detail survey were completed, and traverse and triangulation in preparation for survey in the Máhim Táluka. The detail survey was Rs. 10 per square mile more costly than similar work in the same táluka last year.

CENTRAL CIRCLE.

Babhul Reserves.—The survey covered 24·24 square miles, *viz.*, ·41 in Haveli of Poona, and 23·83 in the Kopargaon and Nevása Tálukas of Ahmednagar. The cost of this work has been diminishing, as the figures for the last three years (Rs. 190, 179, and 115 per square mile) show. The great decrease this year is due to the cheapening of supervision.

Other detail survey.—In the Haveli Táluka of Poona, 6·89 square miles of teak forest, and 159·35 square miles of other forest, besides the babhul reserves were covered, and an area of 106 square miles of teak forest in Sangamner, and Akola of Ahmednagar. Both on the 8 and the 4 inch scales, the work was cheaper than last year.

SOUTHERN CIRCLE.

Kánara Forests.—Work was confined to triangulation and traverse. This is in accord with the plan sketched out last year of endeavouring to make greater progress by securing a large area for future detail survey. The area triangulated was 725 square miles in 3 tálukas (Yellápur, Sirsi and Ankola). The cost compares very favourably with that of similar work last year in Kánara. Traverse was done in 75 square miles of Kárwár, at a cost of Rs. 29 per square mile. Colonel Hobday remarks that two causes combined to raise the cost,—difficulty of country, and inexperience of the Surveyor. The latter was evidently the principal reason, for the Karwár Táluka does not present such difficulties as other tálukas of Kánara.

Kolába Forests.—Work in Pen Táluka was continued, and completed in Alibág. The cost of detail survey including the triangulation was about Rs. 186 per square mile. The cost of the detail survey, excluding triangulation, is a little less than last year.

I have the honour to be,

Sir,

Your most obedient Servant,

E. C. OZANNE,

Survey Commissioner, and Director of

Land Records and Agriculture.

SIND CIRCLE.

No. 1129 OF 1896.

REVENUE DEPARTMENT.

Commissioner's Office,

Karachi, 31st March 1896.

Annual Administration Report of the Sind Forest Circle for the year 1894-95.

Forwarded to Government.

2. The figures in the earlier paragraphs of Mr. Desai's report appear to have been taken from the special Forest Settlement Officer's report, which the Acting Commissioner is forwarding to Government with the Forest Report of the year 1894-95. As these figures are inaccurate and do not represent the actual areas notified, a statement is attached to Mr. Barrow's report in which are given the actual areas afforested and disforested according to the Forest years. This statement explains why the amended figures given below should be substituted for those in Mr. Desai's report :—

Paragraph 3—

For 50,796 *read* 51,349.

For 37,945 *read* 38,153.

For 12,851 *read* 13,196.

Paragraph 16—

The same corrections will come here.

Paragraph 17—

The area actually disforested in Thul was 23,974, *not* 23,871 acres.

Paragraph 18—

The distributions among forest divisions cannot be checked.

Paragraph 25—

38,330 acres as the area which was disforested is not correct; 38,335-25 is correct.

Paragraph 28—

The areas should be—

Section 4.	Section 19.	Section 26.
57,698-17	63,031	38,335
not	*not*	*not*
56,738-25	61,375	38,128

3. When these corrections have been made, the area of reserved forest is found to have increased by 13,196 acres excluding the net loss by erosion of 1,252 acres; besides a small area of 183 acres of protected forest in the neighbourhood of Jacobabad has been disforested. Including everything, there appears to be a net increase of 13,013 acres. There is also a total area of 10,906 acres out of the areas mentioned in paragraph 29 which has still to be settled. A special officer is now demarcating the areas selected by Mr. Barrow.

4. In his paragraph 17, Mr. Desai takes exception to the disforestment of 9,432 acres in the Rohri Taluka. From the correspondence, which has been referred to, it seems that Mr. Desai's predecessor was consulted and raised no objection to the proposal. Mr. Desai had signified his intention to experiment on 1,000 acres of the Sultankot reserve by obtaining water through the Public Works Department at a time when it was not needed by cultivators. No allusion is made to this in the report, and it is supposed that the inundation was too poor to allow of the experiment being made.

5. The inundation with which the report of the Forest year 1894-95 is concerned was that of 1894—an extraordinarily high one. Its effect appears to have been extremely good in the riverain forests of the Sukkur Division and

in the Hyderabad Division; existing growth was stimulated and bare patches were covered with seedlings, and owing to a breach in the river bund near Sukkur, forests were inundated which had been left dry for some years.

In the Jerruck Division, it is said that the continual flooding the babul forests receive prevents reproduction, and elsewhere it is stated that the floods dammed up by protective bunds deposited large quantities of silt which choked the undergrowth. The presentiment expressed in paragraph 68 as to the probable results on riverain forests of the embankment policy of the Public Works Department is hardly justified. It is not generally admitted that the extension of protective bunds has been the cause of the higher inundations of the past few years.

Pasture was abundant, and a diminution of the grazing receipts might perhaps have been expected. There has been a slight increase, however, of Rs. 239, which is attributed to better supervision and collection. The extension of green growth also assisted the Forest Department in another way,—in the prevention of fires. The area burnt was 3,544 acres as against 7,809. This comparative immunity is also due to greater care in the Jerruck forests.

There seems to be a slip in paragraph 113, where the receipts from fisheries are said to have increased owing to larger areas having been filled with flood water. The table exhibits a decrease of Rs. 93 from this source, whereas presumably the figures should, in accordance with the Deputy Conservator's remarks, have shown an increase.

6. The height and duration of the inundation not only caused direct loss by erosion, but it interfered with the prearranged programme for timber felling and it retarded operations as forests could not be reached till December.

As before mentioned, there was a net loss of 1,252 acres by erosion, as 16,408 acres were lost, and 15,156 acres are estimated to have been gained by accretion. The loss, however, included 10,000 acres of mature timber, while the areas gained cannot be productive for a number of years, even if they escape the inroads of succeeding inundations. The loss is therefore serious.

Sir Charles Ollivant was convinced from personal observation in the course of his tour that, by careful and timely attention to the annual set of the river, much more might be done than has been done to save for the market (where the demand is steadily increasing) good forest produce which is now wasted. For miles well grown trees may be seen toppling over into the water as the bank gradually erodes. Thus, there is not only unnecessary loss both to the producer and consumer, but the same process is the most abundant factor in causing "snags," which, as dangers to navigation, it becomes the business of the River Conservancy Department to remove at considerable expense. Immediately after the inundation has subsided, it should be the business of the Forest officers annually to mark out for immediate clearance (independently of the rotation compartments) ribbon strips some hundreds of yards wide from a 'cutting' bank wherever there is a forest with well grown trees. If this is a matter to which hitherto too little attention has been paid, the defect must be ascribed to the officers of the Department having been overburdened with the duty of arranging for the chopping and carriage of fuel, which could much more effectively and satisfactorily be performed by contract agency, so that they could not devote sufficient time to the more appropriate subjects of forest economy and extension.

7. The division of forests into compartments, and the cutting of rides, has been almost at a standstill. The area to be dealt with has increased to nearly 2 lakhs of acres, and 3,840 acres only were sub-divided. The explanation is that measurers could not be obtained except at salaries beyond the reach of the Forest Department. It is an unsatisfactory record, and it is hoped that now surveyors have been attached to each division, the actual measuring to be done will not be found an insuperable difficulty. No very great accuracy is required, and the fact that more than one-fourth of the Sind forests are not

broken up must be an obstacle to any plan of operations, besides hindering inspection. The high prices of labour due to railway extension and the large Jamrao Canal project also tended to reduce the outturn.

8. The Deputy Conservator alludes to the insufficiency of the forest protective staff and states that both the establishment is too small and the pay too low. The high rate of wages obtainable for coolie labour affects other departments equally, but it is regrettable to find that the Deputy Conservator has a very low opinion of the character of the trained recruits from the Forest class at Poona.

9. The details of Magisterial cases for breaches of Forest laws appear less satisfactory than in the last report, but it is only in one division that both cases and acquittals have increased. It is not explained why half the prosecution in Sind should have been made in one division. The number of compounded cases has diminished considerably in the same division, while the total for Sind is practically unchanged both under the head of illicit grazing and theft. The amount of compensation credited was Rs. 459 as against Rs. 528. The Deputy Conservator has been throwing open forests for grazing which it seems it has been the practice to keep closed, and $\frac{9}{10}$ths of the total forest area are now open.

The number of impoundings were slightly higher for closed forests and would have been also higher for open forests had not, it is explained, cattle owners preferred to pay the penalties and register their animals. The hedging in of closed areas is carried out by the inhabitants of the neighbourhood in return for certain concessions. This policy of enlisting local services is also adopted in making plantations on bare patches, in fire protection and other ways, and it is a most useful one. The concessions cost little or nothing, and good relations between the Forest Department and zamindars are encouraged.

10. From the figures given in paragraphs 96 and 101, it appears that the output of timber, firewood and charcoal was slightly larger than in the previous year. The felling of timber varies with the demand, and it is noticed that the balance of stock is chiefly logs. The remarks of the Deputy Conservator seem to imply that, had labour been available and work had not been hindered by the high inundation, the outturn might have been much more. The quantity of firewood supplied by Departmental agency was 1,704,778 maunds as against 1,985,499, the North-Western Railway taking more than half. The report is silent as to how far it was possible to meet the requirements of the Railway, and it is not stated how much firewood was sent up to Baluchistan beyond a small quantity to the Executive Engineer, Military Works, Sharigh, though a special area has been set apart to supply Baluchistan. Another paragraph shows that the actual outturn of firewood and charcoal in cubic feet was 39,36,052 as against 36,32,395,—about three lakhs in favour of the year under report. The increase in the cuttings and removals from forests by purchasers is satisfactory. Free grants of wood were made to the value of Rs. 1,162. The difficulty pointed out by Mr. Desai of allowing villagers free access to forests has been recognized, but there is reason to fear that the necessity for obtaining even thorns for fencing through low-paid subordinates opens a road for petty exaction to them, even if it prevents damage and petty thefts.

11. The figures of receipts and expenditure for the two past Forest years in the following table

	Receipts.	Expenditure.	Balance.
1893-94 ...	6,79,252	4,58,470	2,20,782
1894-95 ...	6,79,823	4,17,757	2,62,066

are in favour of the year of report. The expenditure is less and the receipts are a few hundred rupees more. The receipts in Jerruck are less though the net balance is greater than in 1893-94, and in Thar and Parkar both receipts and expenditure are less. With the re-introduction of an improved contract system, a very large reduction in the expenditure and a further diminution of the percentage of charges on receipts is expected.

12. A few remarks are necessary on the so-called Departmental system of extracting firewood to which Mr. Desai has devoted some paragraphs of his

report. A report on the subject has already been submitted to Government. To save the profits made by middlemen when cutting was done by contract, and so, with the best intentions, to keep down the selling price, the Forest Department, which is intended to promote the growth and assist the production of timber and forest products, became a large supplying agency without the necessary machinery. It is only fair to the late Mr. Hexton, under whom the change was inaugurated, to mention that he had observed the difficulties that beset it before he was obliged by illness to take leave in June 1893. The danger of giving large advances through subordinates was recognised by the Honourable Mr. James, and Mr. Desai in taking charge was instructed to at once enquire into and put a stop to the system. In the Sukkur Division, a serious misappropriation of Government funds was brought to light by Mr. Dalal, the Divisional Forest Officer, and the successful conclusion of the prosecution that ensued was in a large measure due to his determination.

A. F. WOODBURN,
Acting Commissioner in Sind.

No. 2906 of 1895-96.

From

THE DEPUTY CONSERVATOR OF FORESTS,
SIND CIRCLE;

To

THE SECRETARY TO GOVERNMENT,
REVENUE DEPARTMENT,
Bombay.

DEPUTY CONSERVATOR'S OFFICE.
Camp Sonda, 25th November 1895.

SIR,

I have the honour to submit herewith the Annual Administration Report of the Sind Forest Circle for the year 1894-95, together with its subsidiary statements.

2. The delay in the submission of the report is to be regretted, but it was unavoidable, as the report of the Sukkur Division was detained by the Collector of Shikarpur for more than a month and a half, which considerably retarded the preparation of the statements and returns required for embodiment in the Circle report.

I have the honour to be,
Sir,
Your most obedient Servant,
F. R. DASAI,
Deputy Conservator of Forests,
Sind Circle.

Through the Commissioner in Sind.